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INCIDENCE OF PUBLICLY PROVIDED  
EDUCATION AND HEALTH CARE EXPENDITURES IN BULGARIA  
A background paper prepared for the Bulgaria Poverty Assessment Study of the World Bank

by

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# 1 Introduction

The objective of this report is to establish how in-kind transfers on education and health care are distributed over the different income groups in Bulgaria. This so-called benefit incidence is implemented by using a methodology applied in many earlier poverty analyses by the World Bank (see e.g. Van de Walle and Nead, 1995). Additionally the distribution of private expenditures, required to make use of publicly provided education and health care facilities, is assessed. The outcome of the benefit incidence analysis is compared with an earlier study on Bulgaria (see Demery and Mehra (1996)); labeled as DM96 in the remainder of the text), which is the predecessor of the current report.

The benefit incidence analysis of education and health care is based on the Bulgaria Integrated Household Survey 1997 (BIHS97). This survey was fielded from March 1997 to September 1997 and covers 2323 households with 6965 persons in total. The survey is nationwide. Per capita consumption reported in the survey is used to measure living standards and to allocate the households to quintiles. The information of the survey on actual use of education and health care is combined with budgetary information on expenditures on these provisions, in order to calculate the benefit incidence. The distribution of benefits of education and health care over quintiles shows to what extent government expenditures in these areas reach the poor groups in the Bulgarian society.

The paper is organized as follows. In Section 2 the education sector is treated. After a short overview of the school system and a quantitative description of the supply side of the education sector, the benefit incidence of education is assessed. An attempt is made to relate the private expenditures needed to make use of government funded education to households income and the unit costs of public spending. In Section 3 an analogous treatment is given to health care. In a final section, section 4, a summary and conclusion is presented. In the remainder of this section some key features of the Bulgarian economy (area and population) are presented. Information from official sources are compared to the data from the survey in order to assess whether these two sources of information correspond.

Bulgaria, located in the south east of Europe, bordered on the north by Romania, on the west by the former republic of Yugoslavia (Serbia/Montenegro) and the former Yugoslav Republic Macedonia, on the south by Greece and Turkey and on the east by the Black sea, has a size of 110,111 square km, or about the same size as Cuba. The average distance from north to south is 250 km and from east to west 450 km. The Danube river creates a natural border with Romania in the north. The size of the population at the end of 1996 is around 8.3 million and has seen a gradual decline over the last years, largely caused by emigration. There are a few ethnic groups of which the most important ones are Turks, Romany gypsies and Macedonians, which together form around 15%. The country is divided in 9 provinces (oblasts), namely Bourgas, Haskovo, Lovech, Montana, Plovdiv, Russe, Sofia City, Sofia and Varna. The major cities are Sofia, the national capital with a population of 1.4 million people, located in the east of the country, Plovdiv in the middle of the country and Varna, the main sea port located at the Black sea, both with around 350 thousand inhabitants. Table 1 summarizes a number of characteristics of the regional composition of population and area. From the table it is observed that a large share of the Bulgarian population is urbanized. The table also shows that Sofia City and Plovdiv region have the largest share of the total population, almost twice as large as Montana region which has the smallest share of the population. Montana, Haskovo and Sofia region have a relatively low population density which is predominantly rural, while the opposite is the case for Sofia City, Plovdiv and Varna region. Sofia City has a population density that is more than tenfold the Bulgarian average.

**Table 1** Population, area, population density and urbanization, 31-12-1996 (BIHS 97 figures between parenthesis)

Region	Population in number	Share in %	Area in sqkm	Share in %	Population per sqkm	Share of urban population in % /a
Bourgas	841798	10.1 (11.3)	14637	13.2	57.5	67.6 (60.2)
Haskovo	895262	10.7 (13.8)	13899	12.5	64.4	59.7 (65.8)
Lovech	982368	11.8 (12.4)	15148	13.6	64.9	64.5 (55.1)
Montana	609967	7.3 (8.4)	10582	9.5	57.6	57.5 (54.5)
Plovdiv	1206644	14.5 (11.2)	13610	12.3	88.7	64.7 (70.2)
Russe	754542	9.0 (11.3)	10884	9.8	69.3	54.3 (60.8)
Sofia City	1189043	14.3 (13.0)	1316	1.2	903.5	95.7 (100.0)
Sofia Region	962729	11.5 (10.7)	18995	17.1	50.7	60.5 (69.3)
Varna	898583	10.8 (6.7)	11940	10.8	75.3	70.8 (59.3)
All Bulgaria	8340936		111011		75.1	67.6 (66.4)

Source: National Institute of Statistics (NIS), BIHS 1997

/a survey estimates in brackets

Table 1 also reports to what extent the regional composition according to NIS corresponds with the regional composition based on the survey<sup>2</sup>. The share of the regional population in the total population and the share of the urban population according to the survey is reported in brackets in the relevant columns. There are differences between survey and NIS data, but the table suggests that the composition of the population is to a large extent tracked by the survey.<sup>3</sup> However, the figures for Varna Region, both the urban and the total population are slightly out of range, possibly caused by an under-sampling of the urban population. Education enrollment and incidence of illness or the use of health care is closely related to the age composition of the population: for education the people with an age between 3 and 18 years is of particular relevance. The incidence of health is rising with age and, hence, the share of older people in the population matters. Table 2 shows the composition of the population by specific and relevant age groups, both according to NIS and BIHS 1997. Also with respect to the age composition the sample survey appears to correspond reasonably well with the NIS data.

**Table 2** Age composition of the population, 31-12-1996

Region	Urban				Rural			
	age 3-18 share of total in % /a		age 50+ share of total in % /a		age 3-18 share of total in % /a		age 50+ share of total in % /a	
	NIS	BIHS	NIS	BIHS	NIS	BIHS	NIS	BIHS
Bourgas	1.57	1.01	1.80	2.71	0.65	0.75	1.40	2.42
Haskovo	1.47	1.75	1.69	2.85	0.87	0.65	1.81	2.16
Lovech	1.56	1.52	2.22	2.14	0.65	1.16	2.22	1.88
Montana	0.94	0.75	1.13	1.90	0.43	0.77	1.77	1.62
Plovdiv	2.03	1.42	2.64	2.60	1.02	0.65	2.01	1.27
Russe	1.05	1.72	1.40	1.72	0.84	0.78	1.62	1.98
Sofia City	2.47	2.11	4.28	4.60	0.11	0.00	0.23	0.00
Sofia Region	1.58	1.61	1.89	2.03	0.81	0.74	2.01	1.49
Varna	1.63	0.61	2.09	1.48	0.64	0.29	1.29	1.82
All Bulgaria	14.29	12.50	19.14	22.03	6.02	5.79	14.36	14.65

Source: NIS, BIHS 1997

/a expressed as a percentage of total population

<sup>2</sup> Unfortunately such a check on the correspondence between survey data and population data is not implemented in DM96

<sup>3</sup> A formal test implying confidence intervals for these shares would be most appropriate, but is however not implemented.

Table 3 gives the household size distribution over quintiles. The table indicates that the average size of the household decreases gradually with income. The group of people aged 3-18, the group that makes use of education, is almost twice as high in the lowest quintile compared to the highest. The share of people that on average make more use of health care services decreases also gradually with income, but the differences are not large. This table suggests that if demand is the same for all income groups, most transfers should reach poor quintiles.

**Table 3** Composition of household size by quintile

Quintile	Mean household size	Mean of the # of persons aged 3-18 per household	Mean of the # of persons aged 50+ per household
1	3,61	0,85	1,19
2	3,10	0,60	1,21
3	3,00	0,52	1,14
4	2,77	0,44	1,08
5	2,70	0,44	0,96
All Bulgaria	3,00	0,55	1,11

Source: BIHS 1997

## 2 Education

The objective of this section is to assess the benefit incidence of publicly provided education in Bulgaria. Before presenting the calculations for this assessment a short overview of the Bulgarian education system is given and some features are presented of the current education sector and of the development of this sector over time.

Bulgarian education in Bulgaria starts at kindergarten: specifically children of 3-6 years of age are in practice sent to kindergarten. Next, a free and compulsory education starts with elementary school and middle school (age 7-14, grade I to VIII), followed by secondary education. Student attend secondary school for three to five years depending on the course of study. In secondary education there are mainly three possible courses: so-called secondary education (general, age 15-17, grade IX to XI), technical schools and vocational schools. Vocational schools constitute occupation related 5-year courses (age 15-19), where students are trained in skills for a specific type of work and are not designed as a conduit to higher education. Technical schools and specialized schools offer 5-year courses that gives access to higher education. The provision of kindergarten and primary & secondary education (elementary schools, middle school, secondary school (general), vocational and technical schools) is all financially administered by the municipalities through Law on Local Autonomy (1990). This is contrary to universities that are directly on the budget of the central government. The Ministry of Education, Sciences, and Technology has overall responsibility for the education system. Although the free education system has guaranteed a traditionally high literacy rate, the recent problems in the Bulgarian economy has put the entire government-financed education sector under pressure.

Table 4 reports a number of features of education by school type and region. The figures emphasize the extraordinary situation in Sofia City compared to the rest of the country: the number of students per school is without exception the highest: in the case of 'kindergarten' almost twice as high and in the case of 'elementary schools, middle schools and secondary general schools', more than twice as high. Plovdiv region also comes out as a region with large schools in terms of students and many students per teacher. Sofia region has an extreme number of students per teacher on 'technical and vocational schools'. The large variation of student per schools may suggest support for calculation of unit cost per region while the number of students per teacher does the opposite. The variation of the number of students per teacher in other regions than Sofia region is limited and provides little support for the calculation of regional unit costs of education (cf. DM96). The contribution of different cost components may shed some light on the relative weight of these factors.

**Table 4** Schools, teachers and students by regions and by school type, 1996 /a

<b>Kindergarten</b>				
<b>Region</b>	<b>Children</b>	<b>Children/Teacher</b>	<b>Children/KG</b>	<b>Female Teachers</b>
Bourgas	26367	12.0	64.8	
Haskovo	26879	10.9	52.3	
Lovech	27710	11.0	61.3	
Montana	17485	10.4	54.0	
Plovdiv	37115	11.2	67.1	
Russe	23641	10.9	61.7	
Sofia City	30864	11.7	118.3	
Sofia Region	28629	11.3	80.0	
Varna	28325	11.1	61.4	
All Bulgaria	247015	11.2	66.5	

**Elementary Schools, Middle School and Secondary General Schools**

<b>Region</b>	<b>Students</b>	<b>Student/Teacher</b>	<b>Student/School</b>	<b>Female Teachers</b>
Bourgas	92893	13.8	258.8	
Haskovo	98813	12.0	218.6	
Lovech	95050	12.7	240.0	
Montana	59634	12.2	228.5	
Plovdiv	133633	13.5	293.7	
Russe	79866	13.6	211.3	
Sofia City	116315	13.6	587.4	
Sofia Region	106180	12.6	260.9	
Varna	99614	13.0	269.2	
All Bulgaria	881998	13.0	269.2	

**Technical and Vocational Schools**

<b>Region</b>	<b>Students</b>	<b>Student/Teacher</b>	<b>Student/School</b>	<b>Female Teachers</b>
Bourgas	20606	10.9	429.3	62.7
Haskovo	23162	10.7	392.6	62.6
Lovech	26205	10.3	312.0	58.9
Montana	13021	10.6	302.8	60.0
Plovdiv	30266	10.7	426.3	60.6
Russe	18369	10.7	328.0	61.9
Sofia City	25902	10.3	446.6	70.9
Sofia Region	25000	14.5	384.6	65.0
Varna	20655	10.6	368.8	64.6
All Bulgaria	203186	10.9	376.3	63.1

Source: NIS

/a student(children)/teacher: number of student (children) per teacher;  
student (children) /school(KG) = number of students per school;  
female teacher: percentage share of female teachers in total

In Table 5 the composition of costs on education by school type and region is presented. The table makes clear that labor is by far the largest cost category for all school types. The table shows a similar pattern as in 1995 reported by DM96 and this applies to the composition of costs for each school type, with the notable exception of lower share of personnel costs and a higher share of textbooks/materials in 'kindergarten'.

**Table 5** Allocation of regional education expenditure by cost category, 1996,  
percentages of total costs per region /a

Kindergarten					
Region	Personnel	Textbooks	Maintenance	Other	
Burgas	58.7	16.9	2.3	22.0	
Haskovo	56.0	20.8	2.9	20.4	
Lovech	53.5	24.3	2.2	20.1	
Montana	60.2	18.3	1.7	19.8	
Plovdiv	54.3	20.4	2.1	23.2	
Russe	57.6	21.8	0.8	19.8	
Sofia City	49.1	22.9	1.9	26.2	
Sofia Region	54.3	21.5	1.7	22.5	
Varna	53.7	23.9	2.1	20.3	
All Bulgaria	54.7 (62)	21.4 (31)	2.0 (2)	21.9 (5)	
Elementary Schools, Middle schools and General Secondary Schools					
Region	Personnel	Textbooks	Maintenance	Other	
Burgas	74.4	12.6	5.6	7.4	
Haskovo	70.4	16.4	3.3	10.0	
Lovech	69.1	16.5	4.6	9.7	
Montana	72.8	14.0	5.0	8.1	
Plovdiv	71.3	15.1	2.4	11.2	
Russe	70.1	18.2	2.6	9.1	
Sofia City	69.1	18.2	3.5	9.2	
Sofia Region	71.2	16.4	4.6	7.8	
Varna	68.5	17.1	4.4	10.0	
All Bulgaria	70.6 (72)	16.1 (12)	3.9 (2)	9.3 (14)	
Vocational and Technical Education					
Region	Personnel	Textbooks	Maintenance	Other	
Burgas	82.3	5.0	2.2	10.4	
Haskovo	71.9	24.3	0.4	3.4	
Lovech	78.0	15.2	2.3	4.5	
Montana	84.1	13.5	0.0	2.4	
Plovdiv	77.3	17.5	0.0	5.2	
Russe	76.0	21.0	0.8	2.2	
Sofia City	79.3	15.8	0.4	4.5	
Sofia Region	82.6	12.5	0.4	4.5	
Varna	82.7	12.1	1.0	4.1	
All Bulgaria	79.5 (79)	13.2 (10)	1.2 (2)	6.1 (9)	

Source: Ministry of Finance

/a between brackets the cost shares for 1995 from DM96 (T2)

### Education outcomes in 1997

Total enrollment by school type is reported in Table 6. The development of enrollment during the period from 1989/90 to 1994/95 shows a decreasing trend for 'elementary and middle school' which is continued in the 1996/97 data. The pattern of development in 'secondary general', 'vocational' and 'technical' is much less determined: if anything this enrollment seems to fluctuate around a constant level. The BIHS 1997 estimates for elementary schools, middle school and secondary general school compare reasonably well with the levels of enrollment reported in the NIS data. The estimates for technical and vocational are lower compared with the NIS data. Such lower enrollment of technical and vocational according to the survey outcome is also reported in DM96. The difference between BIHS 1997 enrollment and NIS enrollment for technical and vocational schools together - the lowest line in the table - is smaller relative to this difference for 1995. Female enrollment in technical schools and male enrollment in vocational schools remains, nevertheless, very low according to BIHS 1997 relative to NIS.

**Table 6** Education enrollments by level of schooling, 1989/90-1994/95, 1996/97

Level	1989/90	1990/91	1991/92 NIS	1992/93	1993/94	1994/95 NIS	1994/95 BIHS	1996/97 NIS	1996/97 BIHS
<i>Elementary and middle school (I-VIII)</i>									
Male	493,529	476,236	479,619	455,917	434,626	427,122	434,112		414,469
Female	463,538	444,977	446,550	426,275	398,451	391,567	409,792		330,129
Total	957,067	921,213	926,169	882,192	833,077	818,689	843,904	791,499	744,598
<i>Secondary General:</i>									
<i>General (IX-XII)</i>									
Male	43,723	39,230	41,133	40,209	41,410	42,623			80,309
Female	89,393	86,846	89,380	85,534	84,857	88,844			130,199
Total	133,116	126,076	130,513	125,743	126,267	131,467	137,408	153,234	210,508
<i>Elementary, middle and Secondary General</i>									
Total	1,090,183	1,047,289	1,056,682	1,007,935	959,344	950,156	981,312	944,733	955,106
<i>Technical (IX-XIII)</i>									
Male	n/a	72,291	71,607	68,884	59,057	63,359		70,426	56,536
Female	n/a	53,637	50,322	44,435	40,355	44,651		51,447	22,855
Total	94,622	125,928	121,929	113,319	99,412	108,010		121,873	79,392
<i>Vocational (IX-XI)</i>									
Male	n/a	73,229	72,200	71,468	71,010	67,644		55,529	25,261
Female	n/a	39,910	39,407	38,916	36,829	32,711		25,784	24,058
Total	96,946	113,139	111,607	110,384	107,839	110,355		81,313	49,319
<i>Technical and Vocational</i>									
Total	191,568	239,067	233,536	223,703	207,251	208,365	97,280	203,186	128,711

Sources: DM96; NIS, BIHS 1995; NIS, BIHS 1997

Table 7 reports the gross and net enrollment ratios by school type. The gross enrollment ratio is defined as the ratio of the number of children enrolled in school, regardless of age, to the number of children of official school age in the population. If, for example, 110 students are enrolled in elementary and middle school, while the number of people in the population with the school age of elementary and middle school (age 7-14) is 100, the gross enrollment ratio is 110/100, or expressed as a percentage 110%. The value of the gross enrollment ratios could be over hundred percent due to failure, belated enrollment, etc. The net enrollment ratio is the ratio of the number of children of official school age enrolled in school to the number of children of official school age in the population. If, in the same example, only 95 students out of the 110 students enrolled in elementary and middle school are of official school age, the net enrollment ratio is 95/100, or expressed as a percentage 95%. Net enrollment ratios by definition never rises above 100%.

It should be noted that the classification of school types in the enrollment ratios is not exactly identical to the one in the remainder of this section. Enrollment figures are calculated by taking together students of the same grade from different school types. Specifically, this implies in the case of the different types of secondary schools, that enrollment of secondary general and the first three grades of technical and vocational schools are taken together. On the other hand, elementary schools, middle and secondary general schools appear to be organizational and administrative units and hence in the calculation of unit costs secondary general education these are taken together with elementary and middle schools.



**Table 7** Gross and net enrollments ratios by school type, quintile, gender, ethnicity and region 1997 /a

Gross enrollment ratio					Net enrollment ratio		
Kindergarten							
		Total	Male	Female	Total	Male	Female
Quintile	1	14.3 (111)	17.1 (118)	11.9 (106)	11.7 (100)	11.4 (100)	11.9 (100)
	2	9.6 (104)	4.3 (110)	13.8 (100)	7.7 (96)	4.3 (100)	10.3 (110)
	3	31.4 (119)	26.7 (114)	35.0 (124)	22.9 (100)	26.7 (93)	20.0 (100)
	4	31.6 (123)	16.7 (131)	45.0 (115)	18.4 (100)	5.6 (100)	30.0 (124)
	5	20.5 (131)	33.3 (117)	8.3 (150)	7.7 (100)	6.7 (100)	8.3 (131)
All Bulgaria		20.1 (118)	19.4 (118)	19.9 (118)	13.5 (99)	12.0 (100)	14.7 (99)
Urban		20.9 (117)			13.6 (99)		
Rural		17.0 (121)			12.4 (100)		
Ethnic Bulgarian /b		22.1			15.1		
NonEthnic Bulgarian/b		12.9			7.1		
Elementary and middle school							
		Total	Male	Female	Total	Male	Female
Quintile	1	82.4 (106)	86.2 (102)	77.3 (110)	74.5 (98)	74.7 (97)	74.2 (98)
	2	98.6 (116)	97.3 (114)	100.0 (118)	91.6 (98)	90.4 (99)	92.9 (97)
	3	105.4 (108)	110.0 (108)	101.6 (109)	95.5 (93)	96.0 (96)	95.2 (89)
	4	103.5 (117)	105.5 (119)	97.6 (115)	89.6 (94)	93.2 (92)	83.3 (95)
	5	101.9 (109)	106.8 (115)	95.9 (102)	88.9 (91)	89.8 (95)	87.8 (88)
All Bulgaria		97.3 (111)	99.7 (111)	94.2 (111)	87.4 (95)	87.8 (96)	86.9 (94)
Urban		99.1 (114)			89.5 (95)		
Rural		93.6 (104)			82.8 (94)		
Ethnic Bulgarian/b		102.1			92.2		
NonEthnic Bulgarian/b		82.0			72.0		
Secondary (Secondary general, Technical and Vocational Schools (first three years))							
		Total	Male	Female	Total	Male	Female
Quintile	1	55.1 (54)	55.3 (63)	54.8 (42)	39.1 (54)	39.5 (63)	38.7 (42)
	2	83.0 (62)	84.0 (61)	82.1 (62)	58.5 (58)	60.0 (61)	57.1 (55)
	3	89.1 (68)	91.2 (71)	83.3 (65)	62.5 (60)	64.7 (64)	60.0 (56)
	4	95.9 (59)	90.5 (59)	100.0 (59)	53.1 (52)	42.9 (50)	60.7 (53)
	5	98.4 (65)	81.3 (63)	116.7 (67)	64.5 (64)	59.4 (63)	70.0 (64)
All Bulgaria		84.0 (62)	78.3 (63)	88.5 (62)	55.3 (58)	53.3 (60)	57.4 (56)
Urban		100.5 (62)			64.0 (58)		
Rural		41.9 (64)			33.7 (56)		
Ethnic Bulgarian/b		104.0			67.3		
NonEthnic Bulgarian/b		26.0			20.8		

Source: BIHS 1997, DM96

/a between brackets the enrollment ratios for 1995 from DM96 (T5)

/b non ethnic Bulgarians are Romany gypsies, Turks and other Bulgarians with a non Bulgarian ethnic background; the BIHS 1997 questionnaire distinguishes 'Bulgarian', 'Bulgarian gypsies', 'Bulgarian Turkish' and 'Other (specify)'.

The 'all Bulgaria' enrollment ratios are extremely low, both gross and net, for 'kindergarten', with levels of 20.1 and 13.5. Also compared to earlier enrollment ratios of kindergarten, and compared to 1996 enrollment ratios based on NIS data these figures are totally out of range and need additional clarification; In the case of 'elementary and middle schools' aggregate enrollment ratios are high (gross: 97.3 and net: 87.4), and only marginally lower compared to the values reported in DM96; In the case of secondary education the aggregate enrollment ratios are on a much lower level (gross: 84.0; net: 55.3). The survey also

reports the reasons for stopping school or never attending school: for the group of people aged 15-17 (or 15-19) the reported reason for not attending school is because the persons involved 'did not like' school. The bigger part of this group reported also to have been working for wage or revenue: 98.9% of the group aged 16-19, that was not attending school reported to have been working for a wage or revenue the last 7 days. While net enrollment ratios are in the same order of magnitude for 'secondary' education compared to the values reported in DM96, gross ratios are, however, much higher in 1997.

The enrollment ratios by quintile show a specific pattern: with the exception of enrollment ratios of kindergarten the lowest quintiles have realized a much lower enrollment, both gross and net, than other quintiles: enrollment ratios of the second and higher quintiles are substantially higher and all move in a much closer range. Compared to the enrollment ratios by quintile reported in DM96 the enrollment ratios of the lowest quintile have decreased considerably. Hence, the data suggest that the enrollment of the poorest quintile has deteriorated in 1997.

Rural and non ethnic Bulgarian enrollment is slightly lower in 'kindergarten' and 'elementary and middle school' compared to respectively urban and ethnic Bulgarian enrollment, but less than half in the case of 'secondary' education! On the basis of these enrollment ratios it is concluded that the enrollment ratios in the lowest quintile are substantially less compared to other quintiles, and, in the case of elementary schools, 'middle schools' and 'secondary education', has decreased relative to 1995. Rural and non ethnic Bulgarian enrollment ratios are much lower in secondary education than their urban and ethnic Bulgarian counterpart. Relative to 1995 the rural enrollment ratio has deteriorated impressively.

### **Benefit incidence of public spending on education**

To calculate the benefit incidence of public spending on education, we need to estimate unit costs of education. Calculation of unit costs allows a comparison of different facilities: in the case of education this implies that distribution of benefits of e.g. universities may be compared with the distribution of benefits of secondary schools. Additionally, unit costs differentiated by region allow regional differences e.g. different preferences in the allocation of budgets (see the description of the education system at the start of this section), different preferences for public provisions of education and health care. Unit costs are calculated by combining the expenditure information from the Ministry of Finance with the enrollment estimates obtained from the BIHS 1997. The figures on enrollment from the National Institute of Statistics allow to assess whether the calculated unit costs based on the BIHS 1997 come close to the ones calculated with the official figures.

Prior to considering unit cost it is reported how the expenditure data are obtained. At the time of doing the calculations for the current analysis, the 1997 region wise and facility wise break-up of municipal expenditure data was not available. Aggregate region wise municipal expenditure data were, however, available. A facility wise break-up is obtained by using the 1996 shares. In the calculation of the 1996 facility shares all expenditure that is difficult to attribute to either 'kindergarten', 'elementary, middle and secondary general schools' and 'technical and vocational schools' is attributed to 'technical and vocational schools': the size of the unit costs suggested that this is a reasonable assumption. Universities are financed entirely through the republican budget and at the time of doing the calculations only 1996 data were available.

If the expenditure data are compared with the expenditure data in DM96, the huge increase in size largely due to hyper inflation at the start of 1997 is striking. Although a comparison of the size of the facility wise 'All Bulgaria' distribution with the distribution in 1995 (DM96) is limited by construction, the evidence suggests that there is a slight shift in expenditure away from 'elementary, middle and secondary general schools' and 'technical and vocational schools' in favor of 'kindergarten'. A comparison of 1996 expenditure data with the 1995 expenditure data reveals similar trends: aggregate expenditure on kindergarten and universities and other post secondary education remains more or less on a constant level, while it contracted to around 70% in the case of elementary schools, middle schools and secondary general schools, and to 60% in the case of vocational and technical schools.

Table 8 reports the unit costs of education which are calculated as the quotient of expenditure and enrollment. The BIHS 1997 based unit costs for 'all Bulgaria' come reasonably close to the NIS based estimates in the case of 'elementary, middle and secondary general schools' and , slightly less, in the case of 'technical and vocational schools'. In the case of 'kindergarten' the BIHS 1997 based unit costs are totally out of range with the NIS based unit costs. The level of enrollment in kindergarten is extremely low according to the BIHS 1997 data, and much lower than reported in the NIS data. This outcome is questionable: the NIS based unit costs for kindergarten seem more reliable both in terms of the regional composition (Sofia City!, see Table 4) as well as in terms of aggregate level (the unit cost is almost twice as high as the 1995 estimate in DM96 and this seems reasonable. In the case of 'elementary, middle and secondary general schools' and 'technical and vocational schools, regional unit costs are extremely high for Varna region and Plovdiv Region and in the case of 'elementary, middle and secondary general schools' extremely low for Russe region probably due to inadequate coverage of the survey (see Table 2). In summary we tend to believe the BIHS 1997 based unit costs for 'elementary and middle schools', we are less certain about the BIHS 1997 based unit costs for 'technical and vocational schools' and we are skeptical about the BIHS 1997 based unit costs for kindergarten. There are also a number of specific regional BIHS based unit costs which are difficult to explain.

Table 9 reports the benefit incidence of education. At least for two school types unit cost calculations based on BIHS enrollment generates questionable outcomes that differ substantially from the NIS based unit costs. Hence, the calculations of benefit incidence are implemented by using unit cost estimates based on NIS data. Note that this procedure causes the All Bulgaria expenditure aggregates in the benefit incidence calculation (Table 9) to be different from the ones in the unit cost calculation (Table 8). Using NIS based unit costs also maintains the comparability with DM96. In the table a benchmark or reference distribution is included: the benchmark is constructed by calculating age-wise all-Bulgaria probabilities to be enrolled (enrollment rates) and by attributing these probabilities to persons and aggregating over quintiles. The benchmark, hence, reflects a distribution of benefits that is equitable in the sense that it allows for the different composition of households in the respective quintiles (see Table 3).

In the case of kindergarten it is observed from the tables that the distribution over income groups is awkward: the lowest quintile takes a more than proportional share, just like the third and the fourth quintile, while the second and the highest quintile take a less than proportional share. This outcome, although partly similar to DM96, seems just another manifestation of the underestimation of kindergarten enrollments in BIHS. Comparison with the benchmark reveals that the share of the lowest two quintiles is far below the equitable share, while the share of the three higher quintiles it is far above their equitable share.

In the case of elementary schools, middle schools and secondary general schools the story is different. The benefits of these type of schools seem evenly distributed over the quintiles, if the distribution is taken at face value. The benchmark, however, indicates a below equitable share for the poorest quintile. Relative to the results for 1995 (DM96) the position of the lowest quintile improves slightly from 17.7% to 21.1% or higher.

In the case of technical and vocational schools a highly skewed distribution of benefits is observed: the poorest quintile receives only a half of the subsidy received by the richest quintile, and the two richest quintiles, the highest two quintiles, receive more than 50% of the subsidy. The benchmark confirms a far below equitable share for the poorest quintile in 1997. The distribution of benefits is, nevertheless, more equal relative to the situation in 1995 (see DM96).

**Table 8**

Unit recurrent costs of publicly provided education by district and level of schooling, 1997

**Kindergarten**

Region	expenditures (000 leva)	enrollment BIHS	NIS	unit costs	
				BIHS (leva)	NIS (leva)
Burgas	11,009,639	7137	26367	1,542,674	417,554
Haskovo	10,758,001	7137	26879	1,507,415	400,238
Lovech	12,794,354	4758	27710	2,689,124	461,723
Montana	10,736,327	2379	17485	4,513,134	614,031
Plovdiv	14,054,013	14273	37115	984,627	378,661
Russe	6,148,661	0	23641	#DIV/0!	260,085
Sofia City	15,690,412	4758	30864	3,297,819	508,373
Sofia Region	13,419,477	10705	28629	1,253,561	468,737
Varna	11,095,360	4758	28325	2,332,029	391,716
All Bulgaria	105,731,971	58283	247015	1,814,106	428,039

**Elementary, middle and secondary general schools**

Region	expenditures (000 leva)	enrollment BIHS	NIS	unit costs	
				BIHS (leva)	NIS (leva)
Burgas	20,801,039	95156	98711	218,599	210,727
Haskovo	22,047,435	115377	103860	191,090	212,280
Lovech	22,104,106	137977	101625	160,202	217,507
Montana	19,266,271	82072	62972	234,748	305,950
Plovdiv	23,623,599	99914	142814	236,439	165,415
Russe	10,524,654	130840	83827	80,439	125,552
Sofia City	24,374,696	122514	132312	198,955	184,221
Sofia Region	25,384,578	107051	111912	237,126	226,826
Varna	19,945,604	44010	106700	453,208	186,932
All Bulgaria	187,596,927	944426	944733	198,636	198,571

**Vocational and technical schools**

Region	expenditures (000 leva)	enrollment BIHS	NIS	unit costs	
				BIHS (leva)	NIS (leva)
Burgas	4,998,115	14273	20606	350,169	242,556
Haskovo	4,002,998	24979	23162	160,258	172,826
Lovech	4,165,704	9516	26205	437,775	158,966
Montana	2,619,776	9516	13021	275,313	201,196
Plovdiv	4,483,813	8326	30266	538,520	148,147
Russe	2,405,375	17842	18369	134,817	130,948
Sofia City	4,260,431	24979	25902	170,564	164,483
Sofia Region	3,872,283	10705	25000	361,724	154,891
Varna	3,058,821	4758	20655	642,905	148,091
All Bulgaria	34,316,645	127272	203186	269,633	168,893

**University**

Region	expenditures /a UNICEF (000 leva)	enrollment BIHS	UNICEF /b	unit costs	
				BIHS (leva)	NIS (leva)
	7,577,200	134408	235701	56,375	32,148

Source: Ministry of Finance, 1996, 1997; NIS, UNICEF and BIHS 1997

/a 1996 expenditure data

/b enrollment data from 1996

**Table 9** Benefit incidence of public spending on education by level of schooling, quintile, region, gender and ethnicity, 1997/a

Quintile	Kindergarten			Elementary and Middle Schools		
	total x1000 leva	column share in %		total x1000 leva	column share in %	
	actual	actual /b	bench-mark	actual /b	actual	bench-mark
1	5,470,103	22.9 (21.9)	33.3	30,931,627	21.1 (17.7)	24.6
2	2,906,208	12.2 (13.6)	20.4	33,250,625	22.7 (21.9)	22.2
3	5,676,558	23.7 (22.5)	15.8	28,814,912	19.7 (21.0)	18.3
4	6,032,135	25.2 (18.6)	16.2	27,938,466	19.1 (19.5)	17.8
5	3,823,783	16.0 (23.4)	14.4	25,632,728	17.5 (19.9)	17.1
All Bulgaria	23,908,787			146,568,359		
Urban	16,600,982	69.4		99,672,479	68.0	
Rural	7,307,805	30.6		46,895,879	32.0	
Male	9,786,811	40.9		81,943,664	55.9	
Female	14,121,976	59.1		64,624,695	44.1	
Ethnic	19,436,615	81.3		116,609,771	79.6	
Bulgarian						
Non-Ethnic-Bulgarian	4,472,172	18.7		29,958,588	20.4	

  

Quintile	Secondary General, Technical and Vocational			University and other post secondary /c		
	total x1000 leva	column share in %		total x1000 leva	column share in %	
	actual	actual /b	bench-mark	actual	actual	bench-mark
1	8,799,102	15.9 (8.1)	22.3		11.5 (10.9)	19.2
2	9,945,120	17.9 (16.2)	16.8		11.5 (12.4)	16.5
3	13,006,477	23.5 (26.6)	22.3		17.7 (32.4)	22.2
4	9,912,667	17.9 (27.4)	16.8		19.5 (20.7)	18.1
5	13,793,838	24.9 (21.7)	21.8		39.8 (23.6)	24.0
All Bulgaria	55,457,204					
Urban	47,755,226	86.1			93.8	
Rural	7,701,979	13.9			6.2	
Male	26,612,668	48.0			39.8	
Female	28,844,536	52.0			61.1	
Ethnic	51,395,195	92.7			97.3	
Bulgarian						
Non-Ethnic-Bulgarian	4,062,009	7.3			3.5	

Source: own calculations

/a benefit incidence calculated with NIS 1997 based regional unit costs (see table 8)

/b between brackets the estimates for 1995 from DM96 (T8)

/c universities are financed with the republican budget and hence show no regional differentiation in unit costs

In the case of university and other post secondary education, the benefits are even less evenly distributed, relative to technical and vocational: the poorest quintile receives only 11.5% of the benefits, while almost 40% of the benefits flows to the richest quintile. The low benefit incidence of the lower income groups (in particular the first and the second quintile) is similar to that in 1995. The benchmark confirms that a disproportional share of the benefits of public spending on universities flows to the richest people.

The distribution of benefits between rural and urban households should be related to their relative position in Bulgaria (see Table 1). The same applies to the distribution of benefits between ethnic Bulgarians and non ethnic Bulgarians (mainly Turks, Romany gypsies and Macedonians, see Introduction). This implies that the benefits of subsidies for technical and

vocational schools are biased towards urban households, and this applies even to a larger extent to subsidies for universities. Relative to the situation in 1995 this distribution of benefits between rural and urban households has hardly changed. A comparable situation emerges if the distribution of benefits between ethnic Bulgarians and non ethnic Bulgarian is considered: on kindergarten, elementary schools, middle schools and secondary general schools the distribution of benefits is more or less proportional, while it is highly biased towards ethnic Bulgarians in the case of technical and vocational schools, and universities and other post secondary education.

#### **Private outlays of households on publicly provided education**

We were unable to extract reliable information on private expenditures from the survey. In particular the transport costs of education generated extremely high values that are in no proportion with household income, and other private costs of education. A listing of the number of people of school age living less than 1 km from school and having transport costs above 300 million LEVA, a multiple of all other costs together, generated more than 300 observations!

### **3 Health care**

The objective of this section is to assess the benefit incidence of publicly provided health care in Bulgaria. Before presenting the calculations for this assessment a short overview of the Bulgarian health care system is given and some characteristics of the supply and the cost composition of the health care sector.

#### **The health care system in Bulgaria**

The publicly financed health care system in Bulgaria<sup>4</sup> is organized at three levels: the first level consists of rural health posts, regional health centers and urban polyclinics for primary clinical care; the second level consists of municipal and regional hospitals for secondary care and the third level consists of medical academies and a variety of specialist hospitals and institutes for tertiary care. The most fundamental reform in the system in recent years has been the decentralization of the management and financing of health care services to the municipalities in which the health care facilities are located. Regional and municipal health services are financed almost entirely from the municipal budget, which is distinct from the central or 'republican' budget. However, the municipal budget is dominated by transfers from the center. These transfers are mainly based on the levels of previous years and have not been altered in accordance with changes in service needs and utilization, leading to a situation where there is a mismatch between resources and needs in some municipalities. It is generally understood that health services have deteriorated in recent years, partly as a result of the problems associated with Bulgaria's transition from a centrally planned economy to a market based economy. In common with most other countries in former centrally planned eastern Europe, Bulgaria's health care system is characterized by the following features: - tax-based financing and no health insurance financing; - public sector provision of services; - universal access to comprehensive care; - centralized planning and management; - extensive infrastructure and staffing; - limited incentives for increasing efficiency. The government adopted several policies that aim to address these weaknesses. These include measures to strengthen primary health care and other basic clinical services (emergency services and blood transfusion services), a greater emphasis on disease prevention, increases in allocations and in the efficiency of resource use within the sector, and, in the longer term, the introduction of contributory national health insurance.

Table 10 shows a number of different types of health care provisions per 1000 inhabitants by region. At the outset we notice that the regional variation of these health care provisions per 1000 inhabitants is substantial: the table provides support for the calculation of regional unit costs of health care (cf. DM96). If we concentrate on the columns of hospital beds and doctors per 1000 inhabitants, a picture emerges with a number of regions having a relatively low level

<sup>4</sup> With only marginal adjustments, this paragraph is taken over from (DM96, para 37, 38 and 39).

of health care provisions (Burgas and Russe), and a number of regions having a relatively high level of health care provision (Sofia City, Lovech, Haskovo). The extremely high level of health care provisions in Sofia City is apparent from many columns in the table. The relatively large number of specialized hospitals and medical academies in Sofia most likely explains these high levels of per capita provisions.

**Table 10** Health care provisions by region per 1997

**Health care supply per 1000 inhabitants**

	Health care Institutions	hospital beds	sanatorial beds	capacity of creches	doctors	dentists	medical personnel	other personnel
<b>region</b>								
Burgas	0.63	7.99	2.69	2.59	2.32	0.44	7.88	6.35
Haskovo	0.82	11.37	2.59	3.86	2.90	0.52	9.13	7.49
Lovech	0.58	11.42	0.66	3.28	3.14	0.55	9.28	7.53
Montana	0.71	10.53	1.31	3.37	2.69	0.54	9.07	7.40
Plovdiv	0.45	9.40	3.95	2.23	3.21	0.69	8.59	7.63
Russe	0.67	9.68	0.21	4.18	2.18	0.41	7.90	6.86
Sofia City	0.18	11.16	0.94	1.66	6.13	1.14	12.78	10.94
Sofia region	0.73	9.63	2.52	3.67	2.72	0.60	8.81	7.65
Varna	0.50	9.60	1.81	3.68	3.51	0.48	8.54	8.51
All Bulgaria	0.56	10.11	1.93	3.07	3.34	0.62	9.25	7.96

Source: NIS

In Table 11 the composition of costs of health care facilities are shown. As in most service sectors in the economy, labor is by far the largest cost category, and this applies to all health care facilities. Some changes relative to 1995 are observed: in hospitals the share of personnel costs and maintenance has decreased from 50% to 44 %, and 17% to 2.3%, while the share of other supplies has increased from 11%. Primary health care units and polyclinics also experience a decrease in the share of personnel costs (from 66% to 57.8%) and maintenance (from 13% to 1.7%) and an increase of the share of drugs and other supplies. Such shifts do suggest important changes in the organization and supply of health care services.

**Table 11:** Allocation of regional health care expenditures by category, 1996 percentages of total costs per region /a

<b>Hospitals</b>	<b>Region</b>	<b>Personnel</b>	<b>Drugs</b>	<b>Other supplies</b>	<b>Maintenance</b>	<b>Other</b>
	Burgas	43.6	28.3	14.3	0.6	13.2
	Haskovo	43.6	19.3	23.4	0.9	12.8
	Lovech	43.8	17.3	23.3	4.4	11.2
	Montana	50.0	18.6	16.5	1.3	13.6
	Plovdiv	40.9	22.3	21.4	2.0	13.4
	Russe	49.5	20.1	21.4	0.6	8.5
	Sofia	47.6	21.3	11.1	1.7	18.3
	Sofia City	47.9	15.3	22.1	2.5	12.2
	Sofia region	43.6	17.6	21.6	2.3	14.9
	Varna	36.7	21.7	25.1	5.2	11.3
	All Bulgaria	44.0 (50)	20.0 (19)	21.3 (11)	2.3 (17)	12.4 (3)
<b>Primary and Polyclinic</b>	<b>Region</b>	<b>Personnel</b>	<b>Drugs</b>	<b>Other supplies</b>	<b>Maintenance</b>	<b>Other</b>
	Burgas	56.0	23.5	14.1	0.8	5.7
	Haskovo	64.6	14.6	14.4	1.9	4.6
	Lovech	57.3	21.5	14.1	2.9	4.3
	Montana	61.5	13.5	17.6	1.9	5.6
	Plovdiv	51.3	25.7	13.6	2.9	6.3
	Russe	66.4	10.9	17.3	1.5	3.8
	Sofia	70.3	5.4	3.7	9.4	11.2
	Sofia City	64.7	13.3	15.7	0.9	5.4
	Sofia region	62.3	13.5	17.4	0.9	5.2
	Varna	44.0	34.9	15.7	1.4	3.7
	All Bulgaria	57.8 (66)	20.0 (14)	15.3 (6)	1.7 (13)	5.1 (2)
<b>Prophylactic Health Care</b>	<b>Region</b>	<b>Personnel</b>	<b>Drugs</b>	<b>Other supplies</b>	<b>Maintenance</b>	<b>Other</b>
	Burgas	46.4	30.9	6.9	1.9	13.9
	Haskovo	45.0	26.4	11.4	3.5	13.8
	Lovech	53.5	17.9	18.8	0.3	9.5
	Montana	32.8	40.8	11.1	1.5	13.8
	Plovdiv	29.8	47.6	13.1	1.1	8.5
	Russe	44.3	42.7	10.8	0.0	2.2
	Sofia	44.2	22.5	12.4	3.3	17.6
	Sofia City	29.6	54.7	9.3	1.5	5.0
	Sofia region	32.2	27.0	15.3	1.0	24.5
	Varna	49.4	19.4	22.6	0.0	8.6
	All Bulgaria	39.1	35.9	12.5	1.5	10.9
<b>Nurseries and Maternity Homes</b>	<b>Region</b>	<b>Personnel</b>	<b>Drugs</b>	<b>Other supplies</b>	<b>Maintenance</b>	<b>Other</b>
	Burgas	61.8	1.5	18.5	0.3	17.9
	Haskovo	54.0	0.9	22.5	5.1	17.4
	Lovech	49.0	1.2	29.0	2.1	18.7
	Montana	60.5	1.1	15.6	0.8	22.0
	Plovdiv	50.5	0.6	21.6	5.4	21.8
	Russe	59.5	0.7	28.2	1.3	10.3
	Sofia City	59.8	0.3	18.4	1.5	20.0
	Sofia region	54.3	0.3	22.8	3.2	19.4
	Varna	48.5	1.8	30.1	2.1	17.5
	All Bulgaria	54.7	1.0	23.6	2.5	18.2

Source: Ministry of Finance; /a between brackets the cost shares for 1995 from DM96 (T2)



### Health outcomes

Table 12 reports the incidence of illness by quintile and the extent to which ill people have made use of health services when ill. The table reconfirms, although in a less outspoken way (relative to DM96) that the lower quintiles are on average reporting less incidence of illness relative to the higher quintiles. Recall that for a number of diverging reasons (diets of poorer households, greater likelihood of maternity related illness due to more children<sup>5</sup>, less potential of prevention due to ignorance) it is very unlikely that in reality per person incidence of illness under poor groups is lower relative to such incidence under rich groups.

The table also supports another observation made in the DM96 paper namely that the propensity to seek care when ill increases over the quintiles. The difference has, however, declined relative to 1995: while 48.9% of the ill people in the current lowest quintile seek care (1995: 48%) , around 62.4% of the ill people in the highest quintile seek care (1995: 70.1%).

We are inclined to expect a pattern of incidence of illness that is opposite of what is reported. We also observe a lower propensity at low income groups to seek health care. A possible explanation for this is that the use of publicly financed health care does entail private costs that are a heavy burden in low income groups.

**Table 12** Incidence of illness and the extent to which ill people seek care, 1997

Quintiles	Injured or ill (in %)			Ill seeking care (in %)		
	Male	Female	Total	Male	Female	Total
1	9.3	10.6	10.0	55.2	43.8	48.9
2	10.7	12.2	11.5	66.2	46.5	55.0
3	12.0	12.4	12.2	54.5	47.7	50.9
4	9.3	11.9	10.7	54.1	53.1	53.5
5	13.8	17.0	15.4	67.8	58.3	62.4
All Bulgaria	11.0	12.8	11.9	60.1	50.3	54.6

Source: BIHS 1997

### Benefit incidence of public spending on health care

Table 13 reports the unit costs of health care which are, analogous to the case of education, calculated as the quotient of expenditure and use on an annual basis. The use of public health care provisions is approximated with number of visits, both in the case of hospitals, and in the case of primary health care units and polyclinics. Although the number of hospital days may be a better indicator of the volume of supplied services, this variable proved to be a poor basis to calculate unit costs, due to the (limited) size of the survey.<sup>6</sup> Additionally the comparability with DM96 is maintained. The number of visits is obtained by expanding the reported numbers of visits during a four week period to an annual basis, and subsequently by expanding the sample observations to nation-wide estimates. Visits to other public facilities than hospitals, primary health care units and polyclinics are attributed to these categories on a pro rata basis. The aggregate number of visits to hospitals has decreased relative to 1995 with 13.4% and visits to primary health care units and polyclinics has decreased 20.6%<sup>7</sup>. To some extent this is explained by a decrease in the size of the population (around 6%). However, a large part of this decrease still needs explanation and we can only guess about its causes.

At the time of running the calculations for this analysis the region and facility wise expenditure data for 1997, both municipal and republican, were not available. Municipal region wise municipal expenditure data for 1997 were, however, available, and both region and facility

<sup>5</sup> This is confirmed by BIHS 1997, see Table 3

<sup>6</sup> Primary health care units and polyclinics also offer a mixture of in-patient and out-patient health care: in-patient health care is by no means limited to hospitals. Because the number of hospital days is an important indicator of the volume of services supplied, it seems logical, conceptually, to use hospital days as the basis to calculate unit costs. However, the low incidence of in-patient care makes the BIHS 1997 not appropriate to base a nationwide estimate on.

<sup>7</sup> The calculation method in DM96 is not particularly well documented and, hence, it is not entirely clear if the number of visits in this paper can be compared with DM96

wise municipal expenditure for 1996. Consequently facility wise and region wise health care expenditure by municipalities is obtained by imposing the 1996 region wise facility shares on the 1997 regional expenditure. Republican expenditure is calculated by using the 1996 share of republican expenditure in total health care expenditure (both municipal and republican), allocating this to facilities by exploiting the available information on the destination of the republican expenditure item and finally by attributing the facility wise aggregates to region on the basis of their 1997 municipal expenditure shares.

Again, we first should place the aggregate expenditure figure in perspective, prior to considering unit costs: the 1997 aggregate expenditure on health care has increased immensely relative to 1995, largely due to the crisis in February 1997: expenditure on hospitals has increased more than 17-fold and expenditure on primary health care units and polyclinics more than 29 fold! The difference in the increase in expenditure, however, suggests a huge and dramatic shift away from the hospitals and toward primary health care units & polyclinics.<sup>8</sup>

With respect to the regional unit costs it should be noted that the Varna unit costs for hospitals and also but to a much smaller extent unit costs for primary health care units and polyclinics are extremely high. This is most likely due to the under-sampling of the urban population in Varna (see Table 1 and 2). The regional spread of unit costs in the case of hospitals corresponds roughly with the availability of health care services as presented in Table 10 with the exception of Sofia City (and Varna, see above).

**Table 13:** Unit recurrent costs of publicly provided health care by district and health facility, 1997

Region	Hospitals			Primary health care units and polyclinics		
	annual health expenditures (000 leva)	visits	expenditure per visit	annual health expenditures (000 leva)	visits	expenditure per visit
Bourgas	25,914,690	952227	27,215	21,015,086	986854	21,295
Haskovo	32,663,093	542650	60,192	17,523,462	2068854	8,470
Lovech	28,849,421	465223	62,012	24,852,560	1395669	17,807
Montana	27,318,013	678567	40,258	25,963,878	1432530	18,124
Plovdiv	31,490,131	439279	71,686	29,893,024	2782098	10,745
Russe	15,210,403	501015	30,359	9,261,529	1219137	7,597
Sofia City	37,471,402	1012697	37,002	30,559,891	1864649	16,389
Sofia Region	29,202,973	1077850	27,094	25,800,594	1392914	18,523
Varna	29,713,635	118847	250,016	25,187,440	1069622	23,548
All Bulgaria	257,833,760	5763309	44,737	210,057,465	14425028	14,562

Source: Ministry of Finance 1996, 1997; BIHS 1997

Tables 14 reports the benefit incidence of health care. Because of the gender difference of the incidence of illness and the use of health care provisions, the benefit incidence is also presented by gender. As in the case of education a benchmark is created as a reference distribution. The benchmark is constructed by calculating all-Bulgaria probabilities by age (10 years age groups) of visits to hospitals and PHCU / polyclinics, and attribute these probabilities to individuals and aggregate over quintiles. The resulting distribution reflects an equitable distribution of the benefits of public spending on health care.

In the case of hospitals a extremely skewed distribution of benefits is observed. The poorest quintile receives only 9.6% of the subsidy, while the richest quintile receives more than three times as much. More than 50% of all subsidies flows to the highest income groups. It should be noted that the health care needs are not distributed evenly over income groups, but are most likely much higher in low income groups. This is partly confirmed by comparison with the

<sup>8</sup> Possibly this is an underestimation which is due to the procedure to obtain a facility wise break-up of republican expenditure; this would also explain the relatively low unit costs of Sofia City, which might be expected to be high having a high component of specialist health services (academic hospitals).

benchmark distribution. Compared to the situation in 1995 the situation has changed slightly in favor of the highest quintile, i.e. has become slightly less favorable to the lower quintiles.

**Table 14** Benefit incidence of public spending on health care by level of schooling, quintile, region, gender and ethnicity, 1997

Hospitals								
	actual, x1000 leva	column share in %, actual			column share in %, benchmark			
Quintile	Total	Total /a	Male	Female	Total	Male	Female	
1	23,011,248	9.6 (10.9)	11.2	8.4	18.4	17.8	18.9	
2	33,400,595	13.9 (15.7)	11.9	15.3	20.1	19.1	20.8	
3	58,565,443	24.4 (20.3)	32.9	18.6	21.2	20.7	21.6	
4	48,844,970	20.3 (26.1)	6.0	30.1	22.3	23.7	21.4	
5	76,361,798	31.8 (27.0)	38.0	27.6	17.9	18.6	17.3	
All Bulgaria	240,184,055							
Ethnic Bulgarian	211,118,213	87.9		92.9				
Non ethnic Bulgarian	29,065,842	12.1	80.6	7.1				
Urban	162,677,620	67.7 (70.8)	69.6	66.5				
Rural	77,506,435	32.3 (29.2)	30.4	33.5				

Primary health care units and polyclinics								
	actual, x1000 leva	column share in %			column share in %, benchmark			
Quintile	Total	Total	Male	Female	Total	Male	Female	
1	33,445,366	17.1 (15.9)	17.6	16.8	20.4	20.6	20.2	
2	32,338,323	16.5 (17.4)	17.8	15.6	19.5	19.4	19.7	
3	42,560,877	21.8 (21.1)	19.6	23.7	19.1	18.6	19.5	
4	42,039,639	21.5 (24.5)	23.9	19.3	20.9	21.2	20.6	
5	45,186,893	23.1 (21.0)	21.1	24.6	20.1	20.2	20.0	
All Bulgaria	195,571,098							
Ethnic Bulgarian	176,727,389	90.4	89.6	91.0				
Non Ethnic Bulgarian	18,843,709	9.6	10.4	9.0				
Urban	138,930,162	71.0 (60.7)	76.0	66.8				
Rural	56,640,936	29.0 (39.3)	24.0	33.2				

Source: own calculations

/a between brackets the estimates for 1995 from DM96 (T 14)

In the case of primary health care units and polyclinics the distribution of benefits is much less skewed. Nevertheless, a smaller share of the benefits flows to the extreme poor relative to the extreme rich (respectively 17.1% and 23.1%). Comparison with the benchmark distribution confirms these observations: the lower quintiles have a lower share relative to their equitable share while the higher quintiles have a higher share relative to their equitable share. Compared to 1995 the situation has hardly changed. The distribution of health care benefits is distributed fairly equal between urban and rural households and this has also hardly changed relative to 1995. Non ethnic Bulgarian benefit more or less equal from hospital subsidies as their ethnic Bulgarian neighbor, although the distribution is slightly less proportional in the case of primary health care units & polyclinics. However, the extremely low benefit of female non ethnic

Bulgarians in both hospitals and primary health care units & polyclinics (7.1% and 9.0%) is striking. Perhaps this is due to cultural differences.

#### **Private outlays of households on publicly provided health care**

A final issue to be considered is the distribution of private outlays required to make use of publicly financed health care provisions. Such costs include costs of consultations, costs of tests, costs of treatments, costs of drugs and costs of transportation. The costs of drugs are by far the largest component with an average share of around 70%. Next, and also an important component is the cost of treatments, which are on average around 20%. Other items are of minor importance. The share of treatment costs in total private costs is slightly higher for the lowest quintile.

The burden of these private costs is assessed by calculating the share of these costs in total income. The share of these costs in household income is on average 2.4%. The distribution is, however, highly skewed: the poorest quintile spends on average 4.2% of its income on health care while all other quintiles spend slightly less than 2% on health care. The richest quintile spends on average 2.8% of its income on health care. The size of the private costs for the lowest quintile suggests an explanation for the underreporting of incidence of illness and the lower propensity among poor households not to seek care when ill (see Table 12).

**Table 15** Private household expenditures on health care, expressed as a percentage of total household expenditures, by type of expenditure and by quintile, 1997

	visits	tests	treatments	drugs	transport	total
quintile						
1	0.08	0.02	1.30	2.64	0.10	4.16
2	0.02	0.01	0.43	1.39	0.06	1.91
3	0.03	0.05	0.42	1.29	0.05	1.85
4	0.05	0.06	0.26	1.41	0.09	1.87
5	0.05	0.08	0.59	1.98	0.11	2.82
All Bulgaria	0.05	0.06	0.52	1.72	0.09	2.43

Source: BIHS 1997

## **4 Summary and conclusion**

### **On education**

For school types other than the data suggest that the enrollment of the poorest quintile has substantially deteriorated in 1997. The evidence suggests a contraction of aggregate expenditure on elementary schools, middle schools and secondary general schools, and vocational and technical schools. The distribution of benefits of education subsidies is highly unequal for all school types. The deviation from an equitable benchmark distribution is the smallest for elementary schools, middle schools and secondary general schools. For all other school types the distribution of benefits becomes highly unfavorable to poor quintiles. Compared to 1995 the distribution of higher types of education has not changed much: if anything the benefit incidence of technical and vocational has become slightly more equal.

### **On health care**

The evidence suggests a major shift of resources away from the hospital sector. In the case of hospitals an extremely skewed distribution of benefits of publicly financed health care is observed: the poorest quintile receives only 9.6% of the subsidy. In the case of primary health care units and polyclinics the distribution of benefits is much less skewed. Nevertheless, a smaller share of the benefits flows to the extreme poor relative to the extreme rich. Given the higher incidence of illness among poor groups, this is most likely an underestimate of the real

benefit. Compared to 1995 the share of the benefits of publicly financed health care of the lowest quintiles has hardly changed.

### **Remaining issues**

There remains a number of problems and questions that require additional attention. Enrollment data for kindergarten based on BIHS 1997 are highly questionable. This problem presumably originates from the survey, but exactly why is unclear. Is there an explanation of such extreme low enrollment in kindergarten. Is it real or purely a problem with the survey. Perhaps more information from other Bulgarian sources may shed some light on this issues.

There is evidence of a substantial contraction of the expenditure on hospitals: the observed contraction of the budget could very well be caused by the treatment of republican outlays. Such an error could also explain the low unit costs of Sofia City. Also the decrease of the visits needs further explanation. This is to some extent explained by the decrease of the population, but perhaps the private outlays of households may create a restraint on making use of health care facilities. This could however also be caused by conceptual differences in the current paper relative to DM96 in the calculation of the number of visits.

Next, it seems that the regional differentiation is problematic in some instances. Unit costs of specific regions seem questionable: in particular we are referring to the health care unit costs (hospitals) for Varna region. Unit costs of education are also extreme for Varna region.

Finally the private outlays required to make use of publicly financed education, and in particular, the private outlays for transport are completely out of range (with other costs, and with household income) and need further consideration.

### **References**

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